Health and Safety has filed a complaint against the owners of a casino for allegedly failing to protect its employees from exposure to ETS. The complaint was reportedly filed under Regulation 330(1)(c) of the Occupational Health, Safety and Welfare Act, violation of which carries a maximum fine of $50,000, and has been listed for a hearing in the Perth Magistrate's Court on February 24, 1993.

The casino, owned by Burswood Resort (Management) Ltd., employs 2,600 full-time and "casual" staff and is apparently Western Australia's largest tourism employer. According to published press reports, the complaint alleges that on or about June 28 and July 12, 1992, Burswood Resort Casino failed to ensure that effective measures were taken to control the level of ETS, so that the health and safety of its employees was not at risk. Evidently, the department monitored smoke levels in the casino during those months after receiving complaints by some 150 casino employees. *See Adelaide Advertiser, Border Mail, The Examiner* and *West Australian*, December 30, 1992, and *The Australian*, December 31, 1992.

LEGAL ISSUES AND DEVELOPMENTS

GERMANY

[39] German Lawyer Addresses Legal Grounds for Workplace Smoking Bans

Reportedly, Dr. Klaus Zapka, a lawyer from Gottingen, Germany, has claimed in a German journal that insufficient epidemiologic, toxicologic and legal support exists for workplace smoking bans. Much of the article reportedly consists of a discussion of scientific literature in connection with legal questions related to court decisions on ETS at the workplace. *See Betriebs-Berater* 1992 Heft 26.

SCIENTIFIC/TECHNICAL ITEMS

LUNG CANCER

[40] "Lung Cancer from ETS Exposure at the Workplace: A More Theoretical Issue," F. Adlkofer, *Zbl. Arbeitsmed.* 42(10): 400-424, 1992

This German article reportedly contains the claim that "a lung cancer risk due to ETS can neither be entirely ruled out nor proved, let alone quantified." The author also reportedly suggests that smoking bans would not "benefit" the working population, as other constituents of the workplace environment would not be included. The author's conclusions are reportedly based on a review of literature concerning ETS.

OTHER HEALTH ISSUES

[41] "Four Modifiable and Other Major Risk Factors for Cot Death: The New Zealand Study," E.A. Mitchell, B.J. Taylor, R.P.K. Ford, A.W. Stewart, D.M.O. Becroft, J.M.D. Thompson, R. Scragg, I.B. Hassall, D.M.J. Barry, E.M. Allen, and A.P. Roberts, *J. Paediatr. Child Health* 28 (Suppl. 1): S3-S8, 1992 [See Appendix A]

The authors of this case-control study report more than fifteen potential risk factors for sudden infant death syndrome (SIDS). Among these is maternal smoking. Reported unadjusted risk estimates for maternal smoking are all greater than 3.4; when other variables are controlled for, the relative risk associated with maternal smoking is reportedly 1.79, which is claimed to be statistically significant.

SMOKING POLICIES AND RELATED ISSUES

[42] *Creating Effective Smoking Policies in the NHS*, Department of Health, Health Education Authority, United Kingdom, 1992

This booklet was prepared by the National Health Service (NHS) in the United Kingdom as part of the healthy-workplace program. The NHS has set the date of May 31, 1993, for its premises to become smoke free "to protect the health of non-smokers, and to encourage other employers and the general public to take steps to avoid the risks of exposure to tobacco smoke."

The booklet cites purported health effects of ETS exposure, current government policy, and prevailing public opinion in support of its proposed smoking policy. Included in the booklet are a model policy and instructions for implementing it, as well as a questionnaire for assessing staff opinions about smoking at work.

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OTHER DEVELOPMENTS

BELGIUM

[43] Workplace Tobacco Policies and Programs Discussed at European Workshop

On November 18, 1992, the European Workshop on Tobacco Prevention at the Workplace was conducted in Brussels under the auspices of the Europe against Cancer programme. Presentations were made at the workshop by representatives of various health and anti-smoking groups who addressed efforts being made in their respective countries to reduce or ban smoking in the workplace. Most presenters acknowledged that workplace smoking policies do not work unless they are reached by consensus and indicated that their organizations are focusing their resources on educational programs intended to convince smokers to quit smoking. Participants included representatives of the EC Commission, the World Health Organization, ASH, occupational health and medical organizations and the tobacco industry.

CHINA

[44] Hong Kong Smoking Group Produces ETS Booklet

The Tobacco Institute of Hong Kong (TIHK) has reportedly produced an 18-page booklet, written in English and Cantonese, which addresses claims about ETS and promotes tolerance as a way to resolve disputes between smokers and nonsmokers. The TIHK will apparently distribute the booklet throughout the community to sports and arts entities, the media, banks, governmental institutions and other similar groups. *See TDC Newsround*, December 24, 1992.

UNITED KINGDOM

[45] Claims of ETS Caused Deaths Made at Press Conference

On January 5, 1993, Phillip Whidden of the Association of Non-Smokers Rights held a press conference during which the claim was made that nearly 140,000 Europeans die every year from exposure to ETS. The conference coincided with the publication of a report authored by Whidden, which further claims that about 10,000 adults and some 5,000 children and fetuses in Britain die each year from ETS exposure. *See Evening Standard*, January 5, 1993.

During a news broadcast Whidden was quoted as saying, "'Twenty times as many people are being killed by second-hand smoking as by drunk driving; we have no law and no protection. The courts aren't on our side, we need immediate action.'" Whidden is apparently calling upon the government to pass laws to force people not to smoke in the presence of nonsmokers and to control smoking so that children are not exposed to ETS. *See* Transcript, *Midday News, LBC Newstalk*, January 5, 1993.

MEDIA COVERAGE

WORLDWIDE SMOKING RESTRICTIONS

[46] "Non-smokers Get a Break as the World Turns on Smoking," N. Maes, *Chicago Tribune*, January 3, 1993

This article, intended to inform American nonsmoking travelers about smoking restrictions around the world, provides a summary of smoking policies and regulations that are in effect in a number of foreign cities, nations and regions. The author also provides telephone numbers for organizations in New Zealand and the United Kingdom that provide more detailed information about locations of interest to travelers where smoking is restricted or prohibited.

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APPENDIX A

The numbers assigned to the following article summaries correspond with the numbers assigned to the synopses of the articles in the text of this Report.

IN THE UNITED STATES

ETS EXPOSURE AND MONITORING

[20] **"Assessment of Multiple Markers of Environmental Tobacco Smoke (ETS) in Controlled, Steady-State Atmospheres in a Dynamic Test Chamber,"** R.J. Rando, P.K. Menon, H.G. Poovey, and S.B. Lehrer, *American Industrial Hygiene Association Journal* 53(11): 699-704, 1992

"Assessment of ETS levels in indoor air is problematic in that cigarette smoke is an exceedingly complex mixture of particulate and gaseous phase components, whose character changes with time because of physical/chemical removal mechanisms, decomposition, and reaction. Most commonly, suspended particles, carbon monoxide, and nicotine are utilized as markers of ETS. Measurement of the ultraviolet light-absorbing fraction of suspended particles has been shown to greatly diminish bias from background levels of airborne particulate matter. However, nicotine is considered the most specific of these markers because it is uniquely associated with the tobacco plant. Greater than 90% of the nicotine is found in the gas phase of ETS, making it a relatively poor marker of the particulate phase or of whole smoke.... Recently, the use of solanesol has been investigated as a alternative specific marker for ETS. Solanesol is also unique to members of the tobacco plant family and exists in air as condensed particulate matter, thus complementing nicotine analyses for assessment of both particulate and gaseous phase components of ETS. However, the determination of solanesol is difficult and requires extensive sample workup."

"Controlled test atmospheres of sidestream and mixed mainstream/sidestream tobacco smoke were produced in a dynamic test chamber.... Different target levels of smoke were attained by varying the number of cigarettes being smoked (one or two cigarettes continuously) and dilution airflow through the chamber. For each level, a 'smoke index' was calculated as the number of cigarettes being smoked divided by the dilution flow rate. Ultraviolet light-absorbing particulate matter (UVPM); aerosol counts and size distribution; and concentrations of CO, NO_2, NH_3, formaldehyde, acetaldehyde, acrolein, and nicotine were determined in the test atmospheres and background dilution air. Parameters exhibiting the highest correlations with smoke index included UVPM, aerosol counts, formaldehyde,and acetaldehyde. The other parameters were also highly correlated.... Differences in concentrations for sidestream and mixed mainstream/sidestream atmospheres were statistically significant for acetaldehyde, formaldehyde, and CO; in each case the level was higher in mixed mainstream/sidestream smoke."

"Commonly used markers and conversion factors for ETS are not necessarily absolute but depend on the generation history and age of the smoke. In light of this, the use of multiple markers of ETS, and a careful analysis of their correlations, is suggested in evaluating ambient levels of ETS. This approach is also advantageous in attempting to dichotomize the contribution of sidestream and mainstream smoke to ETS levels, and in addition, the changing nature of ETS as a function of time after generation offers the potential for using multiple markers to estimate smoke age."

"The pollutant generation factors reported would be most applicable to locations with relatively high ventilation rates such as break rooms, smoking lounges, or social pubs. Under these conditions, the concentration of pollutant produced as a function of smoke index offers a guideline for required ventilation rates to minimize exposure of nonsmokers to passive cigarette smoke."

INDOOR AIR QUALITY

[21] **"Modeling the Modification of the Risk of Radon-Induced Lung Cancer by Environmental Tobacco Smoke,"** D.J. Crawford-Brown, *Risk Analysis* 12(4): 483-493, 1992

"The presence of environmental tobacco smoke (ETS) in homes has been implicated in the causation of lung cancer. While of interest in its own right, ETS also influences the risk imposed by radon and its decay products. The interaction between radon progeny and ETS alters the exposure, intake, uptake, biokinetics, dosimetry, and radiobiology of those progeny. The present paper details model predictions of the various influences of ETS on these factors in the U.S. popula-

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tion and provides estimates of the resulting change in the risk from average levels of radon progeny. It is predicted that the presence of ETS produces a very small (perhaps unmeasurable) increase in the risk of radiation-induced tracheobronchial cancer in homes with initially very high particle concentrations for both active and never-smokers, but significantly lowers the risk in homes with initially lower particle concentrations for both groups when generation 4 of the lung is considered the target site. For generation 16, the presence of ETS generally increases the radon-induced risk of lung cancer, although the increase should be unmeasurable at high initial particle concentrations. The net effect of ETS on human health is suggested to be a complicated function of the initial housing conditions, the concentration of particles introduced by smoking, the target generation considered, and the smoking status of exposed populations. This situation precludes any simple statements concerning the role of ETS in governing the incidence of lung cancer in a population."

SMOKING POLICIES AND RELATED ISSUES

[24] "Public Objections to Environmental Tobacco Smoke," J. Elder, B. Rosbrook, W. Choi, M. Johnson, D. Bal, and J.P. Pierce, *Preventive Medicine* 21: 701-709, 1992

"The adverse health effects of passive or environmental tobacco smoke have been well documented. Passive smoking affects everyone from an adult non-smoker to an unborn fetus. Recently, Glantz and Parmley have asserted that passive smoking is the third leading cause of premature death and disability in the United States. Despite this recent evidence, there are very limited data on the extent to which cigarette smokers are being asked not to smoke in situations in which they are exposing others to their smoke."

"Creative public heath strategies are needed to help passive smokers protect their own health and to mobilize these individuals to become more vocal and assertive in their opposition to other people's cigarette smoke and to tobacco use in general. Unfortunately, little is known about the demographic characteristics, health beliefs, social attitudes, and rationales behind anti-tobacco activism of those individuals who are willing to ask smokers not to smoke in public. The present study sought to provide clarification of some of these issues through a population-based telephone survey of residents of California."

"The present study suggests that the health beliefs and social influences included in the 1990 California Tobacco Survey are related to the individual's level of assertiveness against environmental tobacco smoke. The majority of the non-smokers and nearly half of the smokers in this randomly sampled population indicated that they had recently asked someone to refrain from smoking, while more than one-fourth indicated that, while they had not recently done so, they would ask someone not to smoke. Only 12.7% of the non-smokers and 26.4% of the smokers were not willing to do so. This willingness varied substantially by age, with older individuals (especially older smokers) being less willing to speak up than younger ones."

"The strongest predictors of having asked someone not to smoke in certain situations or being willing to do so were related to social influence in both smokers and nonsmokers. For those individuals who were never wiling to ask someone not to smoke, the strongest predictors for both smokers and nonsmokers were related to health beliefs (e.g., smoking by pregnant women will harm the health of her baby, and preferring to smoke even if it means not living as long)."

"Results from this study are important from two perspectives. Individuals promoting activism among nonsmokers (or among smokers who abstain from smoking in public) may note that, to reach a critical mass, additional efforts with older and with less educated smokers need to be made. Conversely, core support for a campaign of anti-tobacco activism could be drawn from younger nonsmokers or those smokers who refrain from smoking in certain situations. Smokers could be approached with social themes emphasizing the isolation that results from smoking in public places. Additional health and social messages (e.g., the importance of helping smokers who are trying to quit, the harm that smoking can do to the unborn fetus, and the addictiveness of smoking) may increase the effectiveness of any campaign in promoting assertiveness against environmental tobacco smoke."

"The most interesting outcome of the study was the finding that a high percentage of individuals, especially

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among current smokers, have either recently asked someone not to smoke or would have been willing to do so. Given the reluctance to and difficulty of enforcing public nonsmoking statutes, such consumer activism has a tremendous potential for keeping shared breathing spaces free from cigarette smoke."

"Results from this study can provide assertive nonsmokers with the assurance that they are not in the minority, but rather among the majority when asking smokers to refrain from smoking in public."

[25] **"Smoking Policies of Licensed Child Day Care Centers in the United States," D.E. Nelson, J.J. Sacks, and D.G. Addiss, abstract presented at American Public Health Association Annual Meeting, November 1992**

"Environmental tobacco smoke (ETS) adversely affects children's health, but the type and extent of day care center employee smoking policies are unknown. We analyzed a subset of data from a telephone survey of a nationally representative sample of 2,007 licensed child day care center directors done in 1990 by the CDC. Most centers (71.8%) had written smoking policies and would hire smokers (92.7%). A total of 54.6% of centers had smoke-free policies indoors and outdoors. 26.6% had smoke-free policies indoors only, 18.4% restricted smoking to certain times or places, and 0.4% had no restrictions. More than 99% of centers had employee smoking policies at least as stringent as required by state or local regulations. Predictors of having more stringent policies included location in the West, location in a state with a regulation requiring centers to be smoke-free, and having <40 full-time children. More than 18% of centers (with an estimated 700,000 children <5 years of age) had policies that may not adequately protect children from exposure to both ETS and adult smoking behavior. Parents, health care providers and other child advocates should insist that day care centers adopt smoke-free policies, and state and local governments should enact and enforce smoke-free day care regulations."

[26] **"The Role of Outcome and Efficacy Expectations in an Intervention Designed to Reduce Infants' Exposure to Environmental Tobacco Smoke Exposure," V.J. Strecher, K.E. Bauman, B. Boat, M.G. Fowler, R. Greenberg, and H. Stedman, abstract presented at American Public Health Association Annual Meeting, November 1992**

"Increasing recognition and understanding of the adverse effects of passive smoking in childhood, particularly during the first year of life, has lead to efforts to reduce exposure to environmental tobacco smoke (ETS). We have recently completed an intervention trial designed to reduce ETS exposure through a nurse home visit program aimed primarily at mothers of infants. The content, timing and methods of the intervention were largely informed by the self-efficacy framework developed by Bandura. The study population consisted of the 585 enrolled families (292 intervention and 293 control) who received the baseline and both follow-up data collection interviews. Data collectors visited the homes of enrolled infants when the infants were approximately 18 days old and before the family knew their group assignment. The follow-up data were collected when the infants were approximately seven and twelve months old. Longitudinal analyses found both outcome and efficacy expectations predictive of change in, and maintenance of, ETS exposure control. In particular, mothers reporting *both* low outcome and low efficacy expectations tended to have infants with the highest levels of ETS exposure. We also found that our intervention was effective in changing outcome and efficacy expectations in the desired direction. These findings suggest that outcome and efficacy expectations are changeable, and therefore, represent important targets in future programs aimed at controlling ETS exposure."

[27] **"Implications of a Worksite Smoking Ban," G. Sorensen, B. Beder, R. Prible, and J. Pinney, abstract presented at American Public Health Association Annual Meeting, November 1992**

"This paper reports the results of a study conducted in the New England Telephone Company one year after implementation of a ban on smoking in all of its approximately 600 sites. In implementing the policy, the company offered all employees and their spouses the opportunity to participate in a 90-minute hypnotherapy quit smoking seminar, paid for by the company on company time. Two surveys were conducted: a survey of a stratified random sample of 1,949 employees (response rate = 67%), and a survey of the 3,481 participants in the quit smoking program still employed by the company (response rate = 76%). 67% of the respondents to the employee survey were satisfied or very satisfied with the policy, and 89% said that people always or almost always follow the smoking policy. Only 10.7% said that the smoking policy made it harder for them to do their job; 29.8% said it made

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it easier. Of employees who were smokers at the time the policy was first announced, 14% reported quitting by the time of the survey. Of particular importance was the high participation rate of smokers in the quit smoking program; 71% of all smokers employed by the company participated in this program. 58% of respondents to the quit smoking program participant survey reported that they quit for at least 48 hours, and 15% reported they had not smoked even a puff since their quit date. The high participation rate of smokers in this quit smoking program translates into a high number of smokers company-wide who quit smoking as a result of this program."

STATISTICS AND RISK ASSESSMENT

[28] **"Misuse of the Scientific Literature by the Tobacco Industry," L. Bero and S. Glantz, abstract presented at American Public Health Association Annual Meeting, November 1992**

"In May 1990, the USEPA released for public comment a draft risk assessment identifying environmental tobacco smoke (ETS) as a cause of lung cancer in adults and respiratory problems in children. We analyzed the comments and literature cited to determine if the tobacco industry attempted to create scientific controversy where none existed. Seventy-two percent (118/165) of the comments criticized the draft as an incomplete and selective analysis of the scientific literature which contained statistically flawed and inconclusive data. The high proportion of critical comments suggested that the draft had invalid conclusions, but examination of the comments revealed [reportedly statistically significant] differences in the nature and sources of critical comments compared to comments that supported the draft. Eighty-four percent of the critical comments were prepared by consultants with financial ties to the tobacco industry or the industry itself. Comments supporting the draft were submitted primarily by university faculty (34% of supporting comments) or government health agencies (30%). To test the hypothesis that the literature search performed by the EPA was inadequate as claimed in the critical comments, we compared the citations in the EPA draft to those in the critical comments. Three was a [reportedly satistically significant] difference in the citation patterns. Thirty-one percent (123/391) of the EPA citations were on ETS health effects compared to 15% (235/1620) of the citations in the critical comments. Thirty-nine percent of the citations in the critical comments were of unrefereed material compared to 28% of the citations in the EPA draft [reportedly a statistically significant difference]. Our findings suggest that the tobacco industry used the public comment period to create controversy by hiring consultants to criticize the draft, primarily on the basis of unrefereed sources not relevant to the health effects of ETS."

IN EUROPE AND AROUND THE WORLD

OTHER HEALTH ISSUES

[41] **"Four Modifiable and Other Major Risk Factors for Cot Death: The New Zealand Study," E.A. Mitchell, B.J. Taylor, R.P.K. Ford, A.W. Stewart, D.M.O. Becroft, J.M.D. Thompson, R. Scragg, I.B. Hassall, D.M.J. Barry, E.M. Allen, and A.P. Roberts, *J. Paediatr. Child Health* 28(Suppl. 1): S3-S8, 1992**

"New Zealand's high mortality rate from sudden infant death syndrome (SIDS) prompted the development of the New Zealand Cot Death Study. A report of the analysis of the data from the first year has been published. This report now gives the major identified risk factors from the full 3 year data set. In this case-control study there were 485 infants who died from SIDS in the post-neonatal age group, and 1800 control infants, who were a representative sample of all hospital births in the study region. Obstetric records were examined and parental interviews were completed in 97.5% and 86.9% of subjects, respectively. As expected many risk factors for SIDS were confirmed including: lower socio-economic status, unmarried mother, young mother, younger school-leaving age of mother, younger age of mother at first pregnancy, late attendance at antenatal clinic, non-attendance at antenatal classes, Maori, greater number of previous pregnancies, the further south the domicile, winter, low birthweight, short gestation, male infant and admission to a special care baby unit. In addition, however, we identified four risk factors that are potentially amendable to modification. These were the prone sleeping position of the

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baby (odds ratio (OR) = 3.70; 95% confidence interval (CI) = 2.91, 4.70); bed sharing (OR = 2.70; 95% CI = 2.02, 3.62); maternal smoking of 1-9 cigarettes per day (OR = 3.47; 95% CI = 2.50, 4.83), 10-19 cigarettes per day (OR = 3.94; 95% CI = 2.87, 5.41) or more than 20 cigarettes per day (OR = 5.90; 95% CI = 4.20, 8.31); and not breast feeding (OR = 2.39; 95% CI = 1.88, 3.04). After controlling for all of the above variables, the relative risks associated with prone sleeping position (OR = 4.84), sharing bed (OR = 2.02), maternal smoking (OR = 1.79) and not breast feeding (OR = 1.89) were still statistically significant. Population-attributable risk calculations suggest that these four risk factors may account for 82% of deaths from SIDS. The SIDS mortality rate may fall to less than 0.7/1000 live births if all parents stop putting their infants down to sleep in the prone position, do not sleep with their baby, do not smoke, and breast feed their infants."

"Recall bias is a potential problem in retrospective case-control studies, although two recent studies have shown that recall bias has not been a major problem in case-control studies of SIDS...This study has been able to compare prospectively collected information on maternal smoking in pregnancy, breast feeding at discharge from obstetric hospital (from obstetric records) and prone sleeping position at 2-6 weeks of age (from community nursing records), with retrospective data on maternal smoking in the final 2 weeks, breast feeding at any stage of life and infant's sleeping position at the time of death/nominated time (obtained by parent interview). The prevalence of these behaviours are similar whether collected prospectively or retrospectively, confirming that recall bias is not a problem in this particular study."

"This study has confirmed the risk factors that were identified in the analysis of the data from the first year of the study. The mothers of cases were significantly younger, less likely to be married, left school earlier and had lower socio-economic status than mothers of control infants. There were also younger when they had their first pregnancy, more likely to have had other pregnancies, less likely to have attended antenatal classes in the index pregnancy and booked for antenatal care later than control mothers. The infants were more likely to be male, Maori, of low birthweight, a shorter gestation period and were more likely to be admitted to a neonatal unit. The expected winter excess of SIDS was also observed."

"The full results of the study confirm that the most important modifiable risk factor for SIDS is the prone sleeping position."

"The present study also strengthens the evidence for an association between maternal smoking and SIDS. Most studies have shown the adverse effect of maternal smoking, and this persists after controlling for potential confounders. Furthermore, we were able to demonstrate again a biological gradient, such that the more the mothers smoked the more risk there was to the infant. Further analyses on the effect of smoking, including paternal smoking, will be reported later."

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